FUJIFILM

FCR XG-1/CR CL

CR-IR346/348CL

Service Manual

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Fuji Photo Film Co., Ltd.

Printed in Japan

Export Restrictions (TWA) Applying to this Equipment

Export restrictions (TWA) apply to models in which Service Pack/Internet Explorer 4 have been installed on the hard disk of CR-IR346/348CL controller main unit, such as models equipped with DELL OptiPlex GX110 - Pentium II of 733MHz or more, because the encryption key bit length of the Internet Explorer 4 program exceeds the limit.

For models to which export restrictions (TWA) apply, government approval obtained through due procedure is required in order to export or otherwise remove such models from Japan.

Note that the same restrictions apply not only to the main unit but also to after-sale parts, service manuals and service training (for exporting or transferring technology) when such items are dispatched or shipped to foreign countries and when service training is given for trainees from foreign countries.

Precautions in Using the Service Manual

This manual should not be used by anyone other than the servicing staff members qualified through the training specified by our company. Since this manual contains confidential information including engineering know-how related to product development, it is prohibited to distribute the manual to users or to allow them free access to the manual without obtaining prior permission from Fuji Photo Film Co., Ltd.

This manual is intended to assist the service person in the safe and efficient servicing of the equipment described.
The equipment must be used in accordance with the procedures contained in this manual and must not be used for purposes other than those which are described herein.

The equipment should only be used by persons having recognized qualifications and, if relevant, having adequate training on this equipment, especially regarding protective measure such as laser radiation protection.

It is the responsibility of the user to ensure that existing legal regulations regarding installation of the building with respect to the equipment are observed. Moreover the legal regulations regarding the operation of the equipment are to be observed.

Incorrect operation, or failure of the user to maintain the equipment in accordance with the schedule of maintenance, relieves the manufacturer or his agent from all responsibility for consequent non-compliance, damage, injury, defects and/or other malfunction.

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WARNING

This manual is written for International distribution (including distribution in the U.S.) and therefore may contain references to mammography related options.
Mammography functionality for this product is not commercially available in the US, pending FDA Approval.
This functionality must not be activated on US models, the only breast related functionality available in the U.S. is the Specimen Imaging Application.

Important Notice Concerning this Manual

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Introduction

■ Notes on the Use of the Service Manual

1. **This document is intended to be read by the service personnel of Fuji Photo Film Co., Ltd. or authorized agent who is commissioned by Fuji Photo Film Co., Ltd. to perform servicing tasks.**

Under these circumstances, no one is allowed to perform the following actions without the prior written permission from Fuji Photo Film Co., Ltd.

- Duplicating or reproducing this document in whole or in part
- Disclosing this document, in whole or in part, to a person other than the authorized service personnel
- Lending or transferring this document, in whole or in part, to a third party

2. **Due care must be exercised when handling this document because it contains product internal structure descriptions and other confidential information.**

* When the contents of this document need be changed, the information about such changes will be conveyed using “Engineering Change Notice (ECN)”.

The “Engineering Change Notice (ECN)” must also be handled using the same care as for this document.

3. **Due to a product development schedule, the product specifications and available options/variations prevailing at the time of the release of this document may differ from the descriptions given in this document. In such an instance, a Service Engineering Information will be issued as needed to furnish latest information about inapplicable specifications and components.**

4. **If you have any doubt about the contents of this document or find errors, contact your local Fuji Film representative.**

■ Warning and Cautionary Information

Precautions during the service work are indicated by the following terms and symbols.

WARNING	Serious injuries or death may result if this precaution is not observed. Damage of the unit and customer database may also occur.
CAUTION	Mild or moderate injuries may result if this precaution is not observed. Serious malfunction (which may be unrepairable or difficult to repair) may also occur.
IMPORTANT	Abnormal operations (easy to repair) may result if this precaution is not observed.
NOTE	Indicates items which require particular attention.
REFERENCE	Explanation of related items and terms.

■ Precautionary Labels

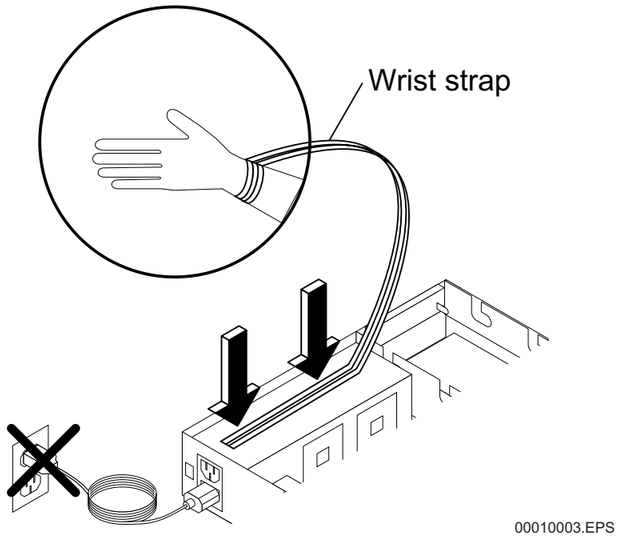
To prevent danger to humans and serious accidents, observe the following.

⚠ WARNINGS

- ***Unless indicated otherwise, be sure to turn off the power switch before maintenance work, and disconnect the power plug from the outlet.***
  Even if the power switch is OFF, 100 to 240VAC (differs according to machine specifications) will still be supplied to the primary input terminal of the unit if the power cable is connected, and this may result in possible electric hazards.
- ***As neckties, scarves, and necklaces may get caught in the unit during work, remove these items or take precautions against such accidents.***
- ***Never modify the unit unless otherwise specified.***
  Modification of the safety unit (interlock, breaker, temperature fuse, etc.) will cause serious problems as it is not only dangerous but violates the related laws and regulations.

◆◆ CAUTIONS ◆◆

- ***The grounding wire must be connected.***
- ***To avoid damages to the parts/units due to static discharge, use a wrist strap putting one end on your wrist and the other end on the grounded section of the equipment, as illustrated below.***
- ***When doing so, make sure to unplug the line cord plug to avoid electrical hazards if using a PC in which the power is energized to the internal power supply or circuits when it is inserted into an outlet.***



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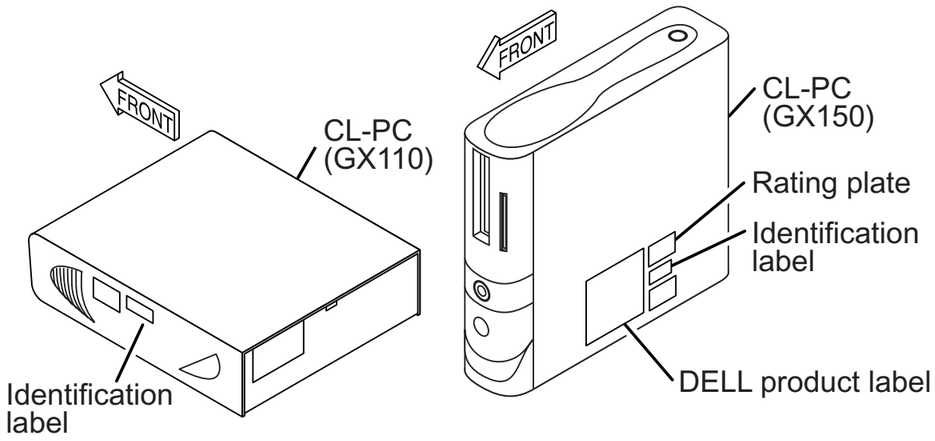
The unit is also pasted with precautionary labels. Follow the instructions on the labels when carrying out work.



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● Identification labels

CR-IR346CL

FUJI PHOTO FILM CO., LTD.
MADE IN JAPAN
FUJI COMPUTED RADIOGRAPHY
CONTROL UNIT 814Y0380
SN
405N2815

CR-IR348CL (Lite)

FUJI PHOTO FILM CO., LTD.
MADE IN JAPAN
FUJI COMPUTED RADIOGRAPHY
CONTROL UNIT 814Y0394
SN
405N2822

CR-IR348CL Plus

FUJI PHOTO FILM CO., LTD.
MADE IN JAPAN
FUJI COMPUTED RADIOGRAPHY
CONTROL UNIT 814Y0427
SN
405N2910

CR-IR348CL (Mobile model)

FUJI PHOTO FILM CO., LTD.
MADE IN JAPAN
FUJI COMPUTED RADIOGRAPHY
CONTROL UNIT 814Y0557
SN
405N3216

00010008.EPS

● Rating plate

CR-IR346CL

FUJI PHOTO FILM CO., LTD.
MADE IN JAPAN
FUJI COMPUTED RADIOGRAPHY
MODEL CR-IR 346CL
ELECTRICAL RATING
INPUT 1-PHASE 50-60Hz 100V~
MAX. INPUT CURRENT 3A
SN
405N2768

CR-IR348CL

FUJI PHOTO FILM CO., LTD.
MADE IN JAPAN
FUJI COMPUTED RADIOGRAPHY
MODEL CR-IR 348CL
ELECTRICAL RATING
INPUT 1-PHASE 50-60Hz 100V~
MAX. INPUT CURRENT 3A
SN
405N2820

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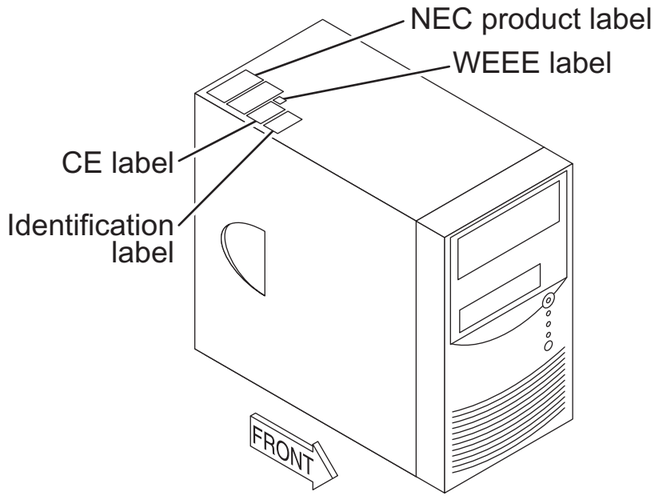

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● Identification labels

CR-IR348CL (Lite)

FUJI PHOTO FILM CO., LTD.
MADE IN JAPAN
FUJI COMPUTED RADIOGRAPHY
CONTROL UNIT 814Y0570
SN
405N3297

CR-IR348CL Plus

FUJI PHOTO FILM CO., LTD.
MADE IN JAPAN
FUJI COMPUTED RADIOGRAPHY
CONTROL UNIT 814Y0569
SN
405N3295

CR-IR348CL (Mobile model)

FUJI PHOTO FILM CO., LTD.
MADE IN JAPAN
FUJI COMPUTED RADIOGRAPHY
CONTROL UNIT 814Y0618
SN
405N3411

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● CE labels

CR-IR348CL (Lite)

Manufacturer FUJI PHOTO FILM CO., LTD.
26-30, NISHIAZABU 2-CHOME, MINATO-KU
TOKYO 106-8620, JAPAN
FUJI COMPUTED RADIOGRAPHY
MODEL CR-IR 348CL Lite
CE
SN
405N3298

CR-IR348CL Plus

Manufacturer FUJI PHOTO FILM CO., LTD.
26-30, NISHIAZABU 2-CHOME, MINATO-KU
TOKYO 106-8620, JAPAN
FUJI COMPUTED RADIOGRAPHY
MODEL CR-IR 348CL Plus
CE
SN
405N3296

CR-IR348CL (Mobile model)

Manufacturer FUJI PHOTO FILM CO., LTD.
26-30, NISHIAZABU 2-CHOME, MINATO-KU
TOKYO 106-8620, JAPAN
FUJI COMPUTED RADIOGRAPHY
MODEL CR-IR 348CL Plus
CE
SN
405N3296

00010013.EPS

Safety Precautions

■ Safety Precautions (Control Unit)

Follow the precautions below when installing, using, and servicing the control unit (PC).

See the User's Guide provided for details on the control unit.

- Input voltage : 115V or 230V
- Electric hazard prevention : The power cord of the control unit and CRT monitor uses a 3-pin plug. Connect it to a properly grounded power outlet. When using an extension cord, use a 3-line type with a grounding pin.
- Place of installation : Avoid places where dust and foreign particles may enter inside through the computer opening. Avoid installing near heaters and heat sources.
- Precautions when working on internal parts of the control unit :
  (1) Turn off the power of the PC, CRT, and other peripheral devices.
  (2) Disconnect the power cord from the outlet to prevent electric hazard.
  (3) Open the I/O panel on the rear of the PC, touch the metallic part to fully discharge body static electricity before accessing.
  (4) When removing the board and memory module, etc., hold them without directly touching the connectors and pins and place them in a static electricity prevention package.

■ Safety Precautions (CRT monitor)

⚠ *WARNING*

High voltage is applied inside the CRT monitor.

To prevent electric hazards and danger, the CRT internal parts cannot be accessed.

The CRT monitor does not consist of parts serviceable by the service engineer.

Cautions Relating to Electromagnetic Compatibility

Electromagnetic Compatibility (EMC)

This equipment has been tested and found to comply with the limits for medical devices according to the IEC60601-1-2:1993 or IEC 60601-1-2: 2001, MDD 93/42EEC or EMC Directive 89/336/EEC.
These limits are designed to provide reasonable protection against harmful interference in a typical medical installation.
This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to other devices in the vicinity.
However, there is no guarantee that interference will not occur in a particular installation.
If this equipment does cause harmful interference to other devices, which can be determined by tuning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving device.
- Increase the separation between the equipment.
- Connect the equipment into an outlet on a circuit different from that to which the other device(s) are connected.
  Consult the manufacturer or field service technician for help.

Further information for IEC60601-1-2:2001

(1) Medical electrical equipment needs special precautions regarding EMC and needs to be installed and put into service according to the EMC information provided in the accompanying documents.

(2) Portable and mobile RF communications equipment can affect medical electrical equipment.

(3) Information of all cables and their maximum lengths and accessories that may affect EMC.

(4) The use of accessories, transducers and cables other than those specified, with the exception of transducers and cables sold by [FUJI PHOTO FILM CO., LTD.] as replacement parts for internal components, may result in increased emissions or decreased immunity of the [CR-IR346CL/348CL].

(5) The [CR-IR346CL/348CL] should not be used adjacent to or stacked with other equipment.
If adjacent or stacked use is necessary, the [CR-IR346CL/348CL] should be observed to verify normal operation in the configuration in which it will be used.

(6) Test items (Tables 1 to 4)

Table 1

Guidance and manufacturer's declaration - electromagnetic emissions		
The CR-IR346CL/348CL is intended for use in the electromagnetic environment specified below. The customer or the user of the CR-IR346CL/348CL should assure that it is used in such an environment.		
Emissions test	**Compliance**	**Electromagnetic environment - guidance**
RF emissions CISPR 11	Group 1	The CR-IR346CL/348CL uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class A	The CR-IR346CL/348CL is suitable for use in all establishments other than domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Complies	

Table 2

Guidance and manufacturer's declaration - electromagnetic immunity			
The CR-IR346CL/348CL is intended for use in the electromagnetic environment specified below. The customer or the user of the CR-IR346CL/348CL should assure that it is used in such an environment.			
Immunity test	**IEC 60601 test level**	**Compliance level**	**Electromagnetic environment - guidance**
Electrostatic discharge (ESD) IEC61000-4-2	±6kV contact ±8kV air	±2kV contact ±4kV contact ±6kV contact ±2kV air ±4kV air ±8kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC61000-4-4	±2kV for power supply lines ±1kV for input/output lines	±2kV for power supply lines ±1kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC61000-4-5	±1kV differential mode ±2kV common mode	±1kV differential mode ±2kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations of power supply input lines IEC61000-4-11	<5% U_T (>95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95% dip in U_T) for 5 s	<5% U_T (>95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95% dip in U_T) for 5 s	Mains power quality should be that of a typical commercial or hospital environment. If the user of the CR-IR346CL/348CL requires continued operation during power mains interruptions, it is recommended that the CR-IR346CL/348CL be powered from an uninterruptible power supply or a battery.
Power frequency (50/60Hz) magnetic field IEC61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
NOTE: U_T is the a.c. mains voltage prior to application of the test level.			

Table 3

Guidance and manufacturer's declaration - electromagnetic immunity			
The CR-IR346CL/348CL is intended for use in the electromagnetic environment specified below. The customer or the user of the CR-IR346CL/348CL should assure that it is used in such an environment.			
Immunity test	**IEC 60601 test level**	**Compliance level**	**Electromagnetic environment - guidance**
Conducted RF IEC61000-4-6	3 Vrms 150 kHz to 80 MHz	3 Vrms	Portable and mobile RF communications equipment should be used no closer to any part of the CR-IR346CL/348CL, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance $d = 1.2\ \sqrt{P}$
Radiated RF IEC61000-4-3	3 V/m 80 MHz to 2.5 GHz	3 V/m	$d = 1.2\ \sqrt{P}$ 80 MHz to 800 MHz $d = 2.3\ \sqrt{P}$ 800 MHz to 2.5 GHz where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey,[a] should be less than the compliance level in each frequency range.[b] Interference may occur in the vicinity of equipment marked with the following symbol:
NOTE 1: At 80 MHz and 800 MHz, the higher frequency range applies. NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			
a Field strength from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the CR-IR346CL/348CL is used exceeds the applicable RF compliance, the CR-IR346CL/348CL should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the CR-IR346CL/348CL. b Over the frequency range 150 kHz to 80 MHz, field strength should be less than 3 V/m.			

Table 4

Recommended separation distances between Portable and mobile RF communications equipment and the CR-IR346CL/348CL			
The CR-IR346CL/348CL is intended for use in the electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the CR-IR346CL/348CL can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the CR-IR346CL/348CL as recommended below, according to the maximum output power of the communications equipment.			
Rated maximum output power of transmitter W	**Separation distance according to frequency of transmitter m**		
	150 kHz to 80 MHz $d = 1.2\ \sqrt{P}$	**80 MHz to 800 MHz** $d = 1.2\ \sqrt{P}$	**800 MHz to 2.5 GHz** $d = 2.3\ \sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23
For transmitters rated at a maximum output power not listed above, the recommended separation distance *d* in metres (m) can be estimated using the equation applicable to the frequency of the transmitter, where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer. NOTE 1: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies. NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			

Abbreviations adopted in this manual:

- **PC** : Hardware (personal computer) used in the CR-IR346CL controller
- **CL** : CR-IR346CL
- **RU** : CR-IR346RU
- **OS** : Operating System (Windows 2000)
- **AP** : Application Software

Name of the target product of this manual:

Note that the target product name of this manual has been changed from “FCR XG1” to “FCR XG-1”. Read thus “XG1” appearing in this manual “XG-1”.

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